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J. E. Pollock
Site Vice President
Administration

May 22, 2008
Indian Point Unit No. 2
Docket No. 50-247
NL-08-075

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, D.C. 20555-0001

Subject: Licensee Event Report # 2008-001-00, "Manual Reactor Trip Due to Decreasing Steam Generator Levels Caused by Loss of Feedwater Flow as a Result of a Feedwater Pump Speed Control Malfunction"

Dear Sir or Madam:

Pursuant to 10 CFR 50.73(a) (1), Entergy Nuclear Operations Inc. (ENO) hereby provides Licensee Event Report (LER) 2008-001-00. The enclosed LER identifies an event where the reactor was manually tripped, which is reportable under 10 CFR 50.73(a)(2)(iv)(A). As a result of the reactor trip, the Auxiliary Feedwater System was actuated which is a system listed in 10 CFR 50.73(a)(2)(iv)(B) that is reportable under 10 CFR 50.73(a)(2)(iv)(A). This condition has been recorded in the Entergy Corrective Action Program as Condition Report CR-IP2-2008-01333.

There are no new commitments identified in this letter. Should you have any questions regarding this submittal, please contact Mr. Robert Walpole, Manager, IPEC Licensing at (914) 734-6710.

Sincerely,

J. E. Pollock
Site Vice President
Indian Point Energy Center

cc: Mr. Samuel J Collins, Regional Administrator, NRC Region I
NRC Resident Inspector's Office, Indian Point 2
Mr. Paul Eddy, New York State Public Service Commission
INPO Record Center

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LICENSEE EVENT REPORT (LER)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME	INDIAN POINT 2	2. DOCKET NUMBER	05000-247	3. PAGE	1 OF 4
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4. TITLE Manual Reactor Trip Due to Decreasing Steam Generator Levels Caused by Loss of Feedwater Flow as a Result of Feedwater Pump Speed Control Malfunction

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV. NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
3	23	2008	2008	001	00	05	22	2008		05000
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
	<input type="checkbox"/> 20.2201(b) <input type="checkbox"/> 20.2201(d) <input type="checkbox"/> 20.2203(a)(1) <input type="checkbox"/> 20.2203(a)(2)(i) <input type="checkbox"/> 20.2203(a)(2)(ii) <input type="checkbox"/> 20.2203(a)(2)(iii) <input type="checkbox"/> 20.2203(a)(2)(iv) <input type="checkbox"/> 20.2203(a)(2)(v) <input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 20.2203(a)(3)(i) <input type="checkbox"/> 20.2203(a)(3)(ii) <input type="checkbox"/> 20.2203(a)(4) <input type="checkbox"/> 50.36(c)(1)(i)(A) <input type="checkbox"/> 50.36(c)(1)(ii)(A) <input type="checkbox"/> 50.36(c)(2) <input type="checkbox"/> 50.46(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(i)(A) <input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(i)(C) <input type="checkbox"/> 50.73(a)(2)(ii)(A) <input type="checkbox"/> 50.73(a)(2)(ii)(B) <input type="checkbox"/> 50.73(a)(2)(iii) <input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A) <input type="checkbox"/> 50.73(a)(2)(v)(A) <input type="checkbox"/> 50.73(a)(2)(v)(B) <input type="checkbox"/> 50.73(a)(2)(v)(C) <input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 50.73(a)(2)(vii) <input type="checkbox"/> 50.73(a)(2)(viii)(A) <input type="checkbox"/> 50.73(a)(2)(vii)(B) <input type="checkbox"/> 50.73(a)(2)(ix)(A) <input type="checkbox"/> 50.73(a)(2)(x) <input type="checkbox"/> 73.71(a)(4) <input type="checkbox"/> 73.71(a)(5) <input type="checkbox"/> OTHER Specify in Abstract below or in NRC Form 366A
10. POWER LEVEL 94.5%				

12. LICENSEE CONTACT FOR THIS LER

NAME Lizabeth Lee, Supervising Engineer	TELEPHONE NUMBER (Include Area Code) (914) 827-7636
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	JK	PMC	L253	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced type written lines)

On March 23, 2008, at 2216, with reactor power at 94.5%, as part of a planned coast down for a scheduled refueling outage, a manual reactor trip (RT) was initiated as a result of 22 Main Boiler Feed Pump (MBFP) rapid speed reduction causing lowering steam generator levels. All control rods inserted and all required safety systems functioned properly. The plant was stabilized in hot standby with decay heat being removed by the main condenser. There was no radiation release. The Emergency Diesel Generators did not start as off-site power remained available. The Auxiliary Feedwater System automatically started as expected due to Steam Generator low level from shrink. The direct cause was radio frequency interference (RFI) from camera use near a MBFP speed control signal processor. The root cause of the event was lack of knowledge that a digital camera is an RFI source that can produce adverse effects on digital control components. Contributing causes were a poor choice of the controlling procedure for camera activity, poor change management in implementing the review requirements without providing adequate review tools, failure to follow procedure. Corrective actions include preparation of specific procedural guidance on electronic interference sources, creating a change management plan to track implementation of the new procedure and process, perform a needs analysis for training, and a site communication of this event and lessons learned from the event. The event had no effect on the public health and safety.

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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

Note: The Energy Industry Identification System Codes are identified within the brackets {}.

DESCRIPTION OF EVENT

On March 23, 2008 at 2216 hrs, while at approximately 94.5% reactor power, as part of a planned coast down for a scheduled refueling outage, the 22 Main Boiler Feed Pump (MBFP) {SJ} speed rapidly decreased to 2400 RPM. The speed reduction resulted in reduced feedwater flow to steam generators (SG) {AB} lowering SG water levels. Automatic Turbine runback initiated due to the speed reduction of 22 MBFP below 3300 RPM. Due to unloading of the 22 MBFP, Control Room (CR) {NA} Operators performed immediate actions of Feedwater Abnormal Operating Procedure {2-AOP-FW-1} and manually initiated a Reactor Trip (RT) {JC}. All control rods {AA} fully inserted and all safety systems responded as expected. The event was recorded in the Indian Point Corrective Action Program (CAP) as condition Report CR-IP2-2008-01333. Immediately prior to the event a planner was photographing the MBFP speed control {JK} Lovejoy signal processor power supplies {JX} for an upcoming refueling outage. The event occurred when the planner had taken a fourth picture at approximately 18 to 24 inches from the equipment. System Engineering (SE) reviewed plant data and verified that at the time of camera use steam flow to 22 MBFP turbine decreased very rapidly and 22 MBFP suction flow decreased to approximately 2800 GPM. The Lovejoy signal processor contains both analog and digital components with the digital regulation board (governor board) {90} the main digital component. Engineering concluded that the cause of the malfunction of the 22 MBFP Lovejoy controls was the camera based on discussion with Lovejoy manufacturer and review of the camera specifications. The camera is rated by the Federal Communications Commission (FCC) as radio frequency interference (RFI) device. The CR staff and planner were not aware that just having a digital camera turned on in close proximity to other digital equipment could cause a problem. The planner had been taking pictures with the same camera in CR for the last several months for outage preparation. The CR staff was used to having staff members including engineers, simulator staff and Public Relations personnel taking photographs in the CR. The planner request to CR staff to photograph "power supplies" was allowed since previous activities had no adverse effect. Planning personnel did not perceive a correlation between the use of a camera and its effect on plant equipment but were aware of Security requirements for camera use on site. The procedure for camera use on site is security procedure EN-NS-214, "Camera Controls for Access and Use." The responsibility of SE performing a technical evaluation was not listed under section "5.0 Responsibilities" of procedure EN-NS-214, and the Indian Point Energy Center Nuclear Management Manual (NMM) Review and Approval Form of new procedure EN-AD-101, "Change Management," did not indicate any requirement for cross-discipline review. Based on interviews, no communication plan was used for the new procedure.

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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

Interviews with plant staff revealed that none of the SEs interviewed were aware that the security passes for cameras required permission from SE for flash photography inside electronic cabinets or computers. All personnel interviewed stated they knew to carry their camera passes when using the cameras but thought the requirements were security-related issues only. They were also not aware that digital cameras were RFI emitters but were aware of flash photography effects on EPROM. Personnel lack of knowledge, coupled with previous use of photography in the CR without any adverse issues along with camera passes viewed as permits to carry and use the camera for security reasons only, presented a human performance error trap.

Cause of Event

The direct cause of the malfunction of the MBFP Lovejoy control system was the RFI from an energized camera due to close proximity either from the camera digital circuitry itself or from the electrical discharge of a large capacitor through the xenon flash tube, which interfered with the Lovejoy control system for MBFP speed control. The root cause was a lack of knowledge that a digital camera is a source of RFI which, when within a critical range, for critical digital equipment can cause adverse effects. The CR staff and Planner were not aware that just having a digital camera turned on in close proximity to other digital equipment could cause a problem. Although RFI is a known phenomenon with a potential for un-intentional effects on electronic equipment, digital photography as an RFI source was not recognized or understood.

The following Contributing Causes (CC) were identified: CC1: Poor choice of placing technical requirements in a security procedure caused a mindset that the only restrictions related to the use of cameras are related to security issues, CC2: Poor change management. Neither the Staff obtaining camera passes or SE who was supposed to evaluate use of cameras around sensitive electronic equipment were aware of the requirement, CC3: Failure to follow procedure. The planner failed to follow procedure EN-NS-214 and the camera pass, and request permission from SE prior to camera use around electronic equipment.

Corrective Actions

The following corrective actions have been or will be performed under Entergy's Corrective Action Program to address the cause and prevent recurrence:

- The planning staff were coached on the requirements of EN-NS-214 and management's expectations on camera use in posted areas and referenced the guidance in procedure IP-SMM-MA-102, "Site communications."
- Engineering staff were briefed of the event and lessons learned and requirements of EN-NS-214 for camera use inside electronic cabinets or computers and referenced the guidance in procedure SMM-MA-102.
- The plant staff were notified of the event and lessons learned and requirements of EN-NS-214 for camera use inside electronic cabinets or computers and referenced the guidance in procedure SMM-MA-102.

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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

- A Shift Order was issued to operations providing the event, lessons learned, and the direction to prohibit the use of all cameras or any known RF emitter in the CR and referenced the guidance in procedure SMM-MA-102.
- Develop guidance/fleet procedure on electronic interference sources and their control and use in sensitive areas. Scheduled completion is July 31, 2008.
- Evaluate this CR topic and related information for both initial orientation and General Employee continuing training. Issue any tracking/implementation actions resulting from the needs analysis process. Scheduled completion is July 31, 2008.
- Develop a change management plan related to electronic interference based on digital equipment. Scheduled completion is July 31, 2008.

Event Analysis

The event is reportable under 10CFR50.73(a)(2)(iv)(A). The licensee shall report any event or condition that resulted in manual or automatic actuation of any of the systems listed under 10CFR50.73(a)(2)(iv)(B). Systems to which the requirements of 10CFR50.73(a)(2)(iv)(A) apply for this event include the Reactor Protection System (RPS) including RT and AFWS actuation. This event meets the reporting criteria because a manual RT was initiated at 22:16 hours, on March 23, 2008, and the AFWS actuated as a result of the RT. The malfunction of the MBFP speed control did not result in the loss of any safety function. Therefore, there was no safety system functional failure reportable under 10CFR50.73(a)(2)(v).

PAST SIMILAR EVENTS

A review was performed of the past three years of Licensee Event Reports (LERs) for events that involved a RT from a malfunction of the MBFP speed control. There were no similar LERs identified.

Safety Significance

This event had no effect on the health and safety of the public. There were no actual safety consequences for the event because the event was an uncomplicated RT with no other transients or accidents. Required primary safety systems performed as designed when the RT was initiated. There were no TS related components out of service or off normal status of any safety systems at the time of the RT. The AFWS actuation was expected as a result of low SG water level due to SG void fraction (shrink), which occurs after automatic RT from full load. There were no significant potential safety consequences of this event under reasonable and credible alternative conditions. The reduced FW flow for this event was bounded by the analysis in FSAR Section 14.1.9, "Loss of Normal FW." The AFWS actuated and provided required FW flow to the SGs. Main FW remained available. RCS pressure remained below the set point for pressurizer PORV or code safety valve operation and above the set point for automatic safety injection actuation. Following the RT, the plant was stabilized in hot standby.